CLAIMS:

1. A protection circuit for preventing reverse conduction through a lower voltage driver that is coupled to a first node when a higher voltage driver coupled to the first node is driving the first node to a voltage higher than the maximum voltage of the lower voltage driver, wherein the lower voltage driver includes an output stage having a first transistor having a first current flow terminal coupled to a lower voltage rail and a second current flow terminal coupled to drive the first node, the circuit comprising:

a second transistor having a first current flow terminal coupled to the second current flow terminal of the first transistor and a second current flow terminal coupled to the first node, and further having a control terminal; and

a comparator coupled to detect when a voltage on the first node exceeds the voltage of the lower voltage rail, the comparator having an output coupled to the control terminal of the second transistor and configured to turn the second transistor off if the voltage on the first node exceeds the voltage of the lower voltage rail.

2. The circuit of claim 1 wherein the comparator has a first input coupled to the first node, a second input coupled to the lower voltage rail and an output coupled to the control terminal of the second transistor.

3. The circuit of claim 1 wherein the circuit is constructed of CMOS components.

4. The circuit of claim 1 further comprising a diode clamp coupled between the control terminal and the first current flow terminal of the second transistor.

5. The circuit of claim 4 wherein the diode clamp comprises a third transistor having a first current flow terminal and a control terminal coupled to the control terminal of the second transistor and a second current flow terminal coupled to the first current flow terminal of the second transistor.

6. The circuit of claim 5 wherein the first current flow terminal and the control terminal of the third transistor are also coupled to a tub of the third transistor.

7. The circuit of claim 6 wherein the comparator is configured to output a first voltage level when the voltage on the first node is less than the voltage of the lower voltage rail and to output a second voltage level when the voltage on the first node is greater than the voltage of the lower voltage power rail.

8. The circuit of claim 7 wherein the first transistor also has a control terminal, the circuit further comprising:

a fourth transistor having first and second current flow terminals coupled between the control terminal of the first transistor and a first fixed voltage, the fixed voltage being within one transistor threshold voltage of the second output voltage of the comparator.

9. The circuit of claim 8 wherein the fourth transistor further comprises a control terminal coupled to a select control signal that is at a first voltage when said lower voltage driver is to drive said first node and is at a second voltage when said higher voltage driver is to drive said first node, the second select control signal voltage being within one transistor breakdown voltage of the first fixed voltage.

10. An output stage for a lower voltage power supply driver of a dual stage power supply circuit having protection from reverse conduction through the output stage when a higher voltage driver is driving a common output node of the lower voltage driver and the higher voltage driver to a voltage higher than the maximum voltage of the lower voltage driver, the output stage comprising:

a voltage rail;

a first transistor having a first current flow terminal coupled to the voltage rail and a second current flow terminal coupled to drive the output node;

a second transistor having a first current flow terminal coupled to the second current flow terminal of the first transistor and a second current flow terminal coupled to the output node, and further having a control terminal; and

a comparator coupled to detect when a voltage on the first node exceeds the voltage of the lower voltage rail, the comparator having an output coupled to the control terminal of the second transistor and configured to turn the second transistor off if the voltage on the output node exceeds the voltage of the voltage rail.

11. The output stage of claim 10 further comprising a diode clamp coupled between the control terminal and the first current flow terminal of the second transistor, wherein the diode clamp comprises a third transistor having a first current flow terminal, a control terminal, and a tub coupled to the control terminal of the second transistor and a second current flow terminal coupled to the first current flow terminal of the second transistor.

12. The output stage of claim 11 wherein the comparator has a first input coupled to the output node, a second input coupled to the voltage rail and an output coupled to the control terminal of the second transistor, the comparator being configured to output a first voltage level when the voltage on the output node is less than the voltage of the voltage rail and to output a second voltage level when the voltage on the output node is greater than the voltage of the voltage rail.

13. The output stage of claim 12 wherein the first transistor also has a control terminal coupled to an input signal source;

the output stage further comprising:

a fourth transistor having first and second current flow terminals coupled between the control terminal of the first transistor and a first fixed voltage, the first fixed voltage being within one transistor threshold voltage of the second output voltage of the comparator, the fourth transistor further comprises a control terminal coupled to a select control signal that is at a first voltage when said lower voltage driver is to drive said first node and is at a second voltage when said higher voltage driver is to drive said first node, the second select control signal voltage being within one transistor breakdown voltage of the first fixed voltage; and

a fifth transistor having a first current flow terminal and a control terminal coupled together to the input signal source and the control terminal of the first transistor and having a second flow terminal coupled to the lower voltage rail.

14. A dual stage power supply comprising:

a first, higher voltage power supply driver coupled to an output node;

a second, lower voltage power supply driver coupled to the output node, the second power supply driver comprising:

an input signal source;

a voltage rail;

a first transistor having a first current flow terminal coupled to the voltage rail and a second current flow terminal coupled to drive the output node;

a second transistor having a first current flow terminal coupled to the second current flow terminal of the first transistor and a second current flow terminal coupled to the output node, and further having a control terminal; and

a comparator coupled to detect when a voltage on the first node exceeds the voltage of the lower voltage rail, the comparator having an output coupled to the control terminal of the second transistor and configured to turn the second transistor off if the voltage on the output node exceeds the voltage of the voltage rail.

15. The dual stage power supply of claim 14 further comprising a diode clamp coupled between the control terminal and the first current flow terminal of the second transistor, wherein the diode clamp comprises a third transistor having a first current flow terminal, a control terminal, and a tub coupled to the control terminal of the second transistor and a second current flow coupled to the first current flow terminal of the second transistor.

16. The dual stage power supply of claim 15 wherein the comparator has a first input coupled to the output node, a second input coupled to the voltage rail and an output coupled to the control terminal of the second transistor terminal,

the comparator being configured to output a first voltage level when the voltage on the output node is less than the voltage rail and to output a second voltage level when the voltage on the output node is greater than the voltage of the voltage rail.

17. The dual stage power supply of claim 16;

wherein the first transistor also has a control terminal;

the dual stage power supply further comprising;

a further transistor having first and second current flow terminals coupled between the control terminal of the first transistor and a first fixed voltage, the first fixed voltage being within one transistor threshold voltage of the second output voltage of the comparator, the fourth transistor further comprising a control terminal coupled to a select control signal that is at a first voltage when said lower voltage driver is to drive said first node and is at a second voltage when said higher voltage driver is to drive said first node, the select control signal second voltage being within one transistor breakdown voltage of the first fixed voltage; and

a fifth transistor having a first current flow terminal and a control terminal coupled together to the input signal source and the control terminal of the first transistor and further having a second current flow terminal coupled to the lower voltage rail.